



# UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE  
United States Patent and Trademark Office  
Address: COMMISSIONER FOR PATENTS  
P.O. Box 1450  
Alexandria, Virginia 22313-1450  
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
-----------------	-------------	----------------------	---------------------	------------------

10/579,654

05/18/2006

Paul Meredith

6106-000006/US/NP

9357

27572 7590 04/28/2010  
HARNESS, DICKEY & PIERCE, P.L.C.  
P.O. BOX 828  
BLOOMFIELD HILLS, MI 48303

EXAMINER

WEDDLE, ALEXANDER MARION

ART UNIT

PAPER NUMBER

1714

MAIL DATE

DELIVERY MODE

04/28/2010

PAPER

**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

<b>Office Action Summary</b>	<b>Application No.</b> 10/579,654	<b>Applicant(s)</b> MEREDITH ET AL.	
	<b>Examiner</b> ALEXANDER WEDDLE	<b>Art Unit</b> 1714	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☒ Responsive to communication(s) filed on 20 January 2010.
- 2a) ☐ This action is **FINAL**.                      2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 35-51, 58 and 60-63 is/are pending in the application.
- 4a) Of the above claim(s) 58, 60 and 61 is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 35-51, 58 and 60-63 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☒ Claim(s) 35-51, 58 and 60-63 are subject to restriction and/or election requirement.

### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

### Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All    b) ☐ Some \*    c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

### Attachment(s)

- |   |   |
|---|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892)                    | 4) <input type="checkbox"/> Interview Summary (PTO-413)           |
| 2) <input type="checkbox"/> Notice of Draftperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____                                      |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)         | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date _____   | 6) <input type="checkbox"/> Other: _____                          |

## **DETAILED ACTION**

### ***Response to Arguments***

1. Applicant's cancellation of Claims 52-57 and 59 has overcome the rejection under 35 U.S.C. 102(b)/103(a). The rejection of Claims 52-57 and 59 has been withdrawn.

2. Applicant's arguments, see Remarks, filed January 20, 2010, with respect to the rejection(s) of claim(s) 35-37, 42-51 and 62 under 103(a) as unpatentable over Floch et al. (US'266) have been fully considered and are persuasive. Therefore, the rejection has been withdrawn. However, upon further consideration, a new ground(s) of rejection is made in view of Nambu et al. (US'572).

In response to Applicant's argument that Floch's disclosure of distilled tetraethyl orthosilicate or tetramethyl orthosilicate (also known as silicic acid tetramethyl ester) refers to monomers and not a homopolymer (Remarks, pp. 9-12), Applicant finds the comparison between Floch's disclosed silicic acid tetramethyl ester monomer and the homopolymer of the monomer persuasive.

In response to Applicant's argument that the MS-51 is useful to form a curable silicate film of good appearance and weather resistance without the need for a levelling agent only in the context of the multi-component composition detailed in Nambu et al. and not with general MS-51 compositions (Remarks, p. 13, last paragraph), Examiner considers the disclosure in Nambu et al. of a source of silicic acid tetramethyl ester used in a similar method as that taught by Floch sufficient to suggest to the person of ordinary skill in the art either either to make a substitution of the homopolymer of MS-51

Art Unit: 1714

for the silicic acid tetramethyl ester of Floch in order to ensure a consistent polymer product with predictable results or to practice Floch with the MS-51 source of silane/siloxane compounds as taught by Nambu et al., because Nambu et al. suggests a compound or combination of silane/siloxane compounds similar to that taught by Floch will produce a coating with good weather resistance and appearance.

In response to Applicant's argument that Nambu et al. do not teach similar steps (Remarks, p. 14), Nambu et al. suggests that such products as MS51, regardless of the process by which it is derived and MS51 is a well-known source of the silane/siloxane compounds which may be used as a source of the compounds to create an adequate coating.

***Claim Rejections - 35 USC § 112***

3. The following is a quotation of the first paragraph of 35 U.S.C. 112:

The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

4. Claims 38-41 and 63 are rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the written description requirement. The claim(s) contains subject matter which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventor(s), at the time the application was filed, had possession of the claimed invention. The specification does not disclose the recited ranges.

Art Unit: 1714

***Claim Rejections - 35 USC § 103***

5. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

6. The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

7. This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

8. Claims 35-38, 41-51, and 62-63 are rejected under 35 U.S.C. 103(a) as being unpatentable over Floch et al. (US 5,698,266) in view of Nambu et al (US 6,316,572). .

Art Unit: 1714

Regarding Claims 35-38 and 63, Floch et al. (US'266) teach a method of forming a silica film coated on a substrate, comprising the steps of producing a silica precursor formulation by adding a silicon alkoxide, such as silicic acid tetramethyl ester (also known as tetramethyl orthosilicate and tetramethoxysilane) to a solvent, such as a basic alcoholic medium; coating a substrate with the silica precursor formulation; and curing the silica precursor formulation onto the substrate in a vaporous ammoniacal environment (col. 3, line 65 to col. 4, line 7; col. 4, lines 10-60).

US'266 discloses one embodiment in which the sol is prepared by mixing absolute ethanol with the tetraethyl orthosilicate, such that a person of ordinary skill would expect that the formulation in this example would have a water content of no more than 5% by volume (col. 6, lines 40-43). US'266 fails to teach that the silica sol may be obtained by hydrolysis of the precursor (col. 4, lines 23-29). Nambu et al. (US'572) teach similar steps of adding MS-51 from ColCote, which apparently contains the recited components, to a solvent which may contain water and alcohol to obtain a coating with good weather resistance and appearance (Abstract; col. 17, lines 51-62). It would have been obvious to a person of ordinary skill in the art at the time of invention to modify the process of US'266 by substituting MS-51 as a source of the homopolymer of the monomer apparently disclosed in US'266 from ColCote as a source of silicic acid tetramethyl ester homopolymer and tetramethoxysilane to make the sol gel taught by US'266 with a reasonable expectation of success, because US'572 teaches that MS-51 is useful to form a curable silicate film of good appearance and weather resistance without the need of a leveling agent (Abstract).

Further regarding Claim 62, US'266 in view of US'572 is silent as to establishing an equilibrium between the solvent and the solvent environment. Equilibrium or steady state is a commonly known principle of chemical thermodynamics to provide predictable ratio of reactants and products. It would have been obvious to a person of ordinary skill in the art to apply known thermodynamic principles to bring the closed system to equilibrium in order to ensure a desired and predictable composition of a film with a reasonable expectation of success.

Regarding Claims 42-44, US'266 teaches that the coating may be performed by spin coating or dipping (col. 1, lines 39-41; col. 6, lines 53-55); the coating may be allowed to settle before curing (col. 6, lines 55-56); and the curing is carried out in a closed ammoniac environment (col. 6, line 67 to col. 7, line 5).

Further regarding Claims 35 and 62, and regarding Claims 45-46, in another embodiment, water is included in the formulation (Example 2, col. 7, lines 44-49), but US'266 in view of US'572 is silent as to the exact composition of the formulation after the reactions and process steps have been carried out. It would have been obvious to a person of ordinary skill in the art at the time of invention to modify the process of US'266 by adding some amount of water to accelerate hydrolysis reactions to form the sol within the spirit of the invention with a reasonable expectation of success. Furthermore, the amount of water in the formulation is a result-effective variable, because it was known in the art to affect the degree of crosslinking of silica particles and the overall thickness reduction of the coating (col. 5, line 63 to col. 6, line 4). It would have been obvious to a person of ordinary skill in the art at the time of invention to modify the

Art Unit: 1714

process of US'266 by determining the optimal amount of water as a result of routine optimization.

US'266 in view of US'572 fails to expressly disclose a closed ammonia environment which contains water and alcohol. However, the person of ordinary skill would expect the atmosphere of the closed system to contain ammonia, water, and the same alcohol as used as the solvent in the formation of the silica precursor, because of the vapor pressure of the components.

Regarding Claims 38 and 63, US'266 is silent as to MS-51. Nambu et al. (US'572) teach similar steps of adding MS-51 from ColCote, which apparently contains the recited components, to a solvent which may contain water and alcohol to obtain a coating with good weather resistance and appearance (Abstract; col. 17, lines 51-62). It would have been obvious to a person of ordinary skill in the art at the time of invention to modify the process of US'266 by using MS-51 from ColCote as the source of silicic acid tetramethyl ester homopolymer and tetramethoxysilane to make the sol gel taught by US'266, because US'572 teaches that MS-51 is useful to form a curable silicate film of good appearance and weather resistance without the need of a leveling agent (Abstract). Regarding the concentrations, generally, differences in concentration or temperature will not support the patentability of subject matter encompassed by the prior art unless there is evidence indicating such concentration or temperature is critical.

Regarding Claims 39-41, US'266 discloses an embodiment in which the solvent is absolute alcohol and another embodiment in which the solvent is a mixture of alcohol and water and suggests that the specific ratio of components affects porosity and



Art Unit: 1714

mechanical strength (col. 1, lines 46-63; col. 2, lines 1-9 and lines 13-23; col. 6, lines 61-64; col. 8, lines 29-33). US'266 in view of US'572 apparently does not disclose the exact amount of water to be added to the formulation but discloses various ratios of components and teaches that different ratios of components in the formulation affect the curability, gellation, weatherability, and appearance of the resulting film (col. 9, lines 23-55; col. 11, lines 31-45; col. 16, lines 38-46; col. 17, line 63 to col. 18, line 17). It would have been obvious to a person of ordinary skill in the art at the time of invention to modify the process of US'266 in view of US'572 by determining the optimal ratio of components as a result of routine optimization.

Regarding claims 47-51, US'226 discloses that the composition of the silica precursor or sol gel, which includes the precursor and its solvent, affects the characteristics of the silica film, including its porosity (which, in turn, is known to affect the film's mechanical strength), and is thus a result-effective variable (col. 1, lines 46-63; col. 2, lines 1-9 and lines 13-23; col. 6, lines 61-64; col. 8, lines 29-33) . It would have been obvious to a person of ordinary skill in the art at the time of invention to modify the process of US'266 in view of US'572 by optimizing the relative proportions of the components of the silica precursor to achieve the desired porosity as a result of routine optimization.

### ***Conclusion***

9. No claim is allowed.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to ALEXANDER WEDDLE whose telephone number is

Art Unit: 1714

(571) 270-5346. The examiner can normally be reached on Monday-Thursday, 7:30 AM - 5:00 PM EST.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Michael Kornakov can be reached on (571)272-1303. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/A. W./

Examiner, Art Unit 1714

/Michael Kornakov/

Supervisory Patent Examiner, Art Unit 1714